

AMENDMENTS TO THE CLAIMS

1. (Previously Presented) A method of updating a routing table, the method comprising the computer-implemented steps of:  
sending a first data packet to a particular router, wherein the particular router is always selected only from a set of routers that the first data packet has not already visited;  
wherein the particular router is associated with a first actual time that is a shortest time among all times associated with routers in the set of routers;  
wherein the first actual time has been updated with a previous actual time taken for a previous data packet to travel to a previous destination indicated by the previous data packet;  
receiving a second data packet that indicates a second actual time taken for the first data packet to travel to a destination indicated by the first data packet;  
wherein the destination indicated by the first data packet is the same as the previous destination indicated by the previous data packet;  
wherein the second data packet is sent from the destination indicated by the first data packet;  
updating the first actual time based on the second actual time; and  
updating the routing table based on information contained in the second data packet;  
wherein the method is performed by one or more computing devices.
2. (Original) The method of Claim 1, further comprising:  
updating, based on information contained in the second data packet, a path associated with both the destination and the particular router.
3. (Original) The method of Claim 1, further comprising:  
updating, based on information contained in the second data packet, an indication of an amount of bandwidth available on a path taken by the second data packet.
4. (Original) The method of Claim 1, further comprising:

updating, based on information contained in the second data packet, an indication of whether a path taken by the first data packet is feasible.

5. (Previously Presented) The method of Claim 1, further comprising:  
updating, based on information contained in the second data packet, a list of routers that indicates all routers in a path taken by the first data packet from a router that sent the first data packet to a present router.
6. (Original) The method of Claim 1, further comprising:  
updating the second data packet to indicate an amount of bandwidth available on a path taken by the second data packet.
7. (Previously Presented) The method of Claim 1, further comprising:  
based on information in the second data packet, updating the second data packet to indicate that a path taken by the first data packet is not feasible.
8. (Currently Amended) A method of updating a routing table, the method comprising the computer-implemented steps of:  
for each neighbor router in a set of neighbor routers, associating the neighbor router with an amount of time predicted to be required for a data packet to travel to a specified destination if the data packet is transmitted through the neighbor router;  
receiving a first data packet that indicates the specified destination;  
in response to receiving the first data packet, selecting, from the set of neighbor routers, a particular neighbor router that is associated with a first amount of actual time that is a lowest amount of time, relative to the specified destination, among amounts of time associated with neighbor routers in the set of neighbor routers;  
wherein the selected neighbor router is never in the list of ~~set of~~ routers previously visited by the first data packet;  
wherein the lowest amount of time has been updated with a previous amount of actual time taken for a previous data packet to travel to the specified destination;  
sending the first data packet to the particular neighbor router;

receiving a second data packet that indicates a second amount of actual time taken for the first data packet to travel to the specified destination;  
wherein the second data packet is sent from the specified destination;  
updating, based on the second amount of actual time, the first amount of actual time; and  
updating, based on information contained in the second data packet, the routing table;  
wherein the method is performed by one or more computing devices.

9. (Previously Presented) A method of updating a routing table, the method comprising the computer-implemented steps of:

for each neighbor router in a set of neighbor routers, associating the neighbor router with an amount of time predicted to be required for a data packet to travel to a specified destination if the data packet is transmitted through the neighbor router;  
receiving a forward ant data packet that indicates the specified destination;  
selecting, based on one or more first specified criteria, a subset of the set of neighbor routers;

in response to receiving the forward ant data packet, selecting, from the subset of neighbor routers, a particular neighbor router that is associated with a first amount of actual time that is a lowest amount of time, relative to the specified destination, among amounts of time associated with neighbor routers in the subset of neighbor routers;

wherein the one or more first specified criteria comprise a criterion that no neighbor router in the subset of neighbor routers is in a list of routers already visited by the forward ant data packet;

wherein the lowest amount of time has been updated with a previous amount of actual time taken for a previous data packet to travel to the specified destination;

sending the forward ant data packet to the particular neighbor router;

receiving a backward ant data packet that indicates a second amount of actual time taken for the forward ant data packet to travel to the specified destination;

wherein the backward ant data packet is sent from the specified destination;

determining, based on information indicated in the backward ant data packet, whether one or more second specified criteria are satisfied; and

if the one or more second specified criteria are satisfied, then performing steps comprising:  
updating, based on the second amount of actual time, the first amount of actual time; and  
if one or more third specified criteria are satisfied, then updating, based on information indicated in the backward ant data packet, the routing table;  
wherein the method is performed by one or more computing devices.

10. (Cancelled)
11. (Previously Presented) The method of Claim 9, further comprising:  
determining whether any neighbor router in the set of neighbor routers is associated with an amount of time that is lower than the first amount of actual time; and  
if any neighbor router in the set of neighbor routers is associated with an amount of time that is lower than the first amount of actual time, then updating the forward ant data packet to indicate a present router in a loop-avoidance router field of the forward ant data packet.
12. (Original) The method of Claim 11, wherein a loop-avoidance router field of the backward ant data packet indicates a router indicated by the loop-avoidance router field of the forward ant data packet.
13. (Original) The method of Claim 12, wherein the one or more second specified criteria comprise a criterion that the router indicated by the loop-avoidance router field of the backward ant data packet is not contained in a list of routers that the forward ant visited after visiting a present router.
14. (Previously Presented) The method of Claim 9, wherein the one or more third specified criteria comprise a criterion that the second amount of actual time is lower than any other amount of time, relative to the specified destination, among amounts of time associated with neighbor routers in the set of neighbor routers.

15. (Original) The method of Claim 9, further comprising:  
determining whether a router from which the backward ant data packet was received  
matches a router associated with the destination in the routing table; and  
if the router from which the backward ant data packet was received does not match the  
router associated with the destination in the routing table, then updating a path  
feasibility flag of the backward ant to indicate that a path taken by the forward ant  
is not feasible.
16. (Original) The method of Claim 15, wherein the one or more third specified criteria  
comprise a criterion that the path feasibility flag of the backward ant indicates that the  
path taken by the forward ant is feasible.
17. (Original) The method of Claim 9, wherein the one or more third specified criteria  
comprise a criterion that a path taken by the forward ant data packet from a present router  
to the specified destination does not include any routers that are identified in a potential  
upstream node list.
18. (Previously Presented) A volatile or non-volatile computer-readable medium storing one  
or more sequences of instructions for updating a routing table, which instructions, when  
executed by one or more processors, cause the one or more processors to carry out the  
steps of:  
sending a first data packet to a particular router, wherein the particular router is always  
selected only from a set of routers that the first data packet has not already visited;  
wherein the particular router is associated with a first actual time that is a shortest time  
among all times associated with routers in the set of routers;  
selecting, from a set of routers, a particular router that is associated with a first actual  
time that is a shortest time among all times associated with routers in the set of  
routers;  
wherein the first actual time has been updated with a previous actual time taken for a  
previous data packet to travel to a previous destination indicated by the previous  
data packet;

receiving a second data packet that indicates a second actual time taken for the first data packet to travel to a destination indicated by the first data packet;  
wherein the destination indicated by the first data packet is the same as the previous destination indicated by the previous data packet;  
wherein the second data packet is sent from the destination indicated by the first data packet;  
updating, based on the second actual time, the first actual time; and  
updating, based on information contained in the second data packet, the routing table.

19. (Cancelled)

20. (Previously Presented) An apparatus for updating a routing table, comprising:  
a network interface that is coupled to a data network for receiving one or more packet flows therefrom;  
a processor;  
one or more stored sequences of instructions which, when executed by the processor, cause the processor to carry out the steps of:  
sending a first data packet to a particular router, wherein the particular router is always selected only from a set of routers that the first data packet has not already visited;  
wherein the particular router is associated with a first actual time that is a shortest time among all times associated with routers in the set of routers;  
wherein the first actual time has been updated with a previous actual time taken for a previous data packet to travel to a previous destination indicated by the previous data packet;  
receiving a second data packet that indicates a second actual time taken for the first data packet to travel to a destination indicated by the first data packet;  
wherein the destination indicated by the first data packet is the same as the previous destination indicated by the previous data packet;  
wherein the second data packet is sent from the destination indicated by the first data packet;

updating, based on the second actual time, the first actual time; and  
updating, based on information contained in the second data packet, the routing  
table.

21. (Previously Presented) The apparatus of Claim 20, wherein the stored sequences of instructions include instructions which, when executed by the processor, cause the processor to further carry out:  
updating, based on information contained in the second data packet, a path associated with both the destination and the particular router.
22. (Previously Presented) The apparatus of Claim 20, wherein the stored sequences of instructions include instructions which, when executed by the processor, cause the processor to further carry out:  
updating, based on information contained in the second data packet, an indication of an amount of bandwidth available on a path taken by the second data packet.
23. (Previously Presented) The apparatus of Claim 20, wherein the stored sequences of instructions include instructions which, when executed by the processor, cause the processor to further carry out:  
updating, based on information contained in the second data packet, an indication of whether a path taken by the first data packet is feasible.
24. (Previously Presented) The apparatus of Claim 20, wherein the stored sequences of instructions include instructions which, when executed by the processor, cause the processor to further carry out:  
updating, based on information contained in the second data packet, a list of routers that indicates every router in a path taken by the first data packet from a router that sent the first data packet to a present router.

25. (Previously Presented) The apparatus of Claim 20, wherein the stored sequences of instructions include instructions which, when executed by the processor, cause the processor to further carry out:  
updating the second data packet to indicate an amount of bandwidth available on a path taken by the second data packet.
26. (New) The volatile or non-volatile computer-readable medium of Claim 18, the instructions further comprising instructions, which when executed, cause the one or more processors to perform updating, based on information contained in the second data packet, a path associated with both the destination and the particular router.
27. (New) The volatile or non-volatile computer-readable medium of Claim 18, the instructions further comprising instructions, which when executed, cause the one or more processors to perform updating, based on information contained in the second data packet, an indication of an amount of bandwidth available on a path taken by the second data packet.
28. (New) The volatile or non-volatile computer-readable medium of Claim 18, the instructions further comprising instructions, which when executed, cause the one or more processors to perform updating, based on information contained in the second data packet, an indication of whether a path taken by the first data packet is feasible.
29. (New) The volatile or non-volatile computer-readable medium of Claim 18, the instructions further comprising instructions, which when executed, cause the one or more processors to perform updating, based on information contained in the second data packet, a list of routers that indicates all routers in a path taken by the first data packet from a router that sent the first data packet to a present router.
30. (New) The volatile or non-volatile computer-readable medium of Claim 18, the instructions further comprising instructions, which when executed, cause the one or more



processors to perform updating the second data packet to indicate an amount of bandwidth available on a path taken by the second data packet.

31. (New) The volatile or non-volatile computer-readable medium of Claim 18, the instructions further comprising instructions, which when executed, cause the one or more processors to perform based on information in the second data packet, updating the second data packet to indicate that a path taken by the first data packet is not feasible.
32. (New) A volatile or non-volatile computer-readable medium storing one or more sequences of instructions, which when executed, cause one or more processors to perform:
  - for each neighbor router in a set of neighbor routers, associating the neighbor router with an amount of time predicted to be required for a data packet to travel to a specified destination if the data packet is transmitted through the neighbor router;
  - receiving a first data packet that indicates the specified destination;
  - in response to receiving the first data packet, selecting, from the set of neighbor routers, a particular neighbor router that is associated with a first amount of actual time that is a lowest amount of time, relative to the specified destination, among amounts of time associated with neighbor routers in the set of neighbor routers;
  - wherein the selected neighbor router is never in the list of routers previously visited by the first data packet;
  - wherein the lowest amount of time has been updated with a previous amount of actual time taken for a previous data packet to travel to the specified destination;
  - sending the first data packet to the particular neighbor router;
  - receiving a second data packet that indicates a second amount of actual time taken for the first data packet to travel to the specified destination;
  - wherein the second data packet is sent from the specified destination;

updating, based on the second amount of actual time, the first amount of actual time;  
updating, based on information contained in the second data packet, the routing table.

33. (New) A volatile or non-volatile computer-readable medium storing one or more sequences of instructions, which when executed, cause one or more processors to perform:
- for each neighbor router in a set of neighbor routers, associating the neighbor router with an amount of time predicted to be required for a data packet to travel to a specified destination if the data packet is transmitted through the neighbor router;
  - receiving a forward ant data packet that indicates the specified destination;
  - selecting, based on one or more first specified criteria, a subset of the set of neighbor routers;
  - in response to receiving the forward ant data packet, selecting, from the subset of neighbor routers, a particular neighbor router that is associated with a first amount of actual time that is a lowest amount of time, relative to the specified destination, among amounts of time associated with neighbor routers in the subset of neighbor routers;
  - wherein the one or more first specified criteria comprise a criterion that no neighbor router in the subset of neighbor routers is in a list of routers already visited by the forward ant data packet;
  - wherein the lowest amount of time has been updated with a previous amount of actual time taken for a previous data packet to travel to the specified destination;
  - sending the forward ant data packet to the particular neighbor router;
  - receiving a backward ant data packet that indicates a second amount of actual time taken for the forward ant data packet to travel to the specified destination;
  - wherein the backward ant data packet is sent from the specified destination;

determining, based on information indicated in the backward ant data packet,  
whether one or more second specified criteria are satisfied;  
if the one or more second specified criteria are satisfied, then performing steps  
comprising:  
updating, based on the second amount of actual time, the first amount of  
actual time; and  
if one or more third specified criteria are satisfied, then updating, based on  
information indicated in the backward ant data packet, the routing  
table.

34. (New) The volatile or non-volatile computer-readable medium of Claim 33, the instructions further comprising instructions which when executed cause the one or processors to perform:
- determining whether any neighbor router in the set of neighbor routers is  
associated with an amount of time that is lower than the first amount of  
actual time; and  
if any neighbor router in the set of neighbor routers is associated with an amount  
of time that is lower than the first amount of actual time, then updating the  
forward ant data packet to indicate a present router in a loop-avoidance  
router field of the forward ant data packet.
35. (New) The volatile or non-volatile computer-readable medium of Claim 34, wherein a  
loop-avoidance router field of the backward ant data packet indicates a router indicated  
by the loop-avoidance router field of the forward ant data packet.
36. (New) The volatile or non-volatile computer-readable medium of Claim 35, wherein the  
one or more second specified criteria comprise a criterion that the router indicated by the  
loop-avoidance router field of the backward ant data packet is not contained in a list of  
routers that the forward ant visited after visiting a present router.

37. (New) The volatile or non-volatile computer-readable medium of Claim 33, wherein the one or more third specified criteria comprise a criterion that the second amount of actual time is lower than any other amount of time, relative to the specified destination, among amounts of time associated with neighbor routers in the set of neighbor routers.
38. (New) The volatile or non-volatile computer-readable medium of Claim 33, the instructions further comprising instructions which when executed cause the one or processors to perform:
- determining whether a router from which the backward ant data packet was received matches a router associated with the destination in the routing table; and
  - if the router from which the backward ant data packet was received does not match the router associated with the destination in the routing table, then updating a path feasibility flag of the backward ant to indicate that a path taken by the forward ant is not feasible.
39. (New) The volatile or non-volatile computer-readable medium of Claim 38, wherein the one or more third specified criteria comprise a criterion that the path feasibility flag of the backward ant indicates that the path taken by the forward ant is feasible.
40. (New) The volatile or non-volatile computer-readable medium of Claim 33, wherein the one or more third specified criteria comprise a criterion that a path taken by the forward ant data packet from a present router to the specified destination does not include any routers that are identified in a potential upstream node list.